

# Setup a low-cost home dialup connection without a real telephone line

This guide is for making a DIAL-UP connection without having an actual phone line.

You can connect your old computer to the Internet, and thanks to a local IP address and the magic of routing, you can also browse everything on your LAN (I tried to access my NAS)

In this guide I have combined and summarized what I have learned from these guides, which are definitely better made than mine. So, a thank you to the original authors; it's all thanks to them.

References:

<https://web.archive.org/web/20240324110826/https://gekk.info/articles/ata-dialup.html>

<https://web.archive.org/web/20240304210734/https://gekk.info/articles/ata-config.html>

[https://web.archive.org/web/20240304210356/https://gekk.info/articles/ras\\_2k3.html](https://web.archive.org/web/20240304210356/https://gekk.info/articles/ras_2k3.html)

<https://web.archive.org/web/20240324110840/https://gekk.info/articles/ras.html>

<https://web.archive.org/web/20240418214026/https://serialport.org/blog/cisco-router-modem-isp-in-a-box/> - Thanks also to Mark of serialport.org for the suggestions sent by email.

What do you need?

- A DIAL-UP server, which can be of 3 types, many devices can serve as DIAL-UP servers, types I know of includes:
  - Any computer or virtual machine running Windows Server 2000-2022, connected to your LAN (also in wifi) and with access to a physical modem
  - An old CISCO router with a 56K modem card (they can be found on ebay for very little money)
  - A raspberry PI with 56K RS232 modem connected with USB-RS232 adapter (not covered by this guide)

In this tutorial we will look at the first 2 server types (Win and Cisco), I have not had time to try it with raspberry but I know it is fattible. You are free to supplement the guide

- A telephone line simulator, which is responsible for providing both 56K modems with the illusion that they are connected to a real telephone line. To do this you can use small devices that were used to connect traditional telephones to a VOIP line.

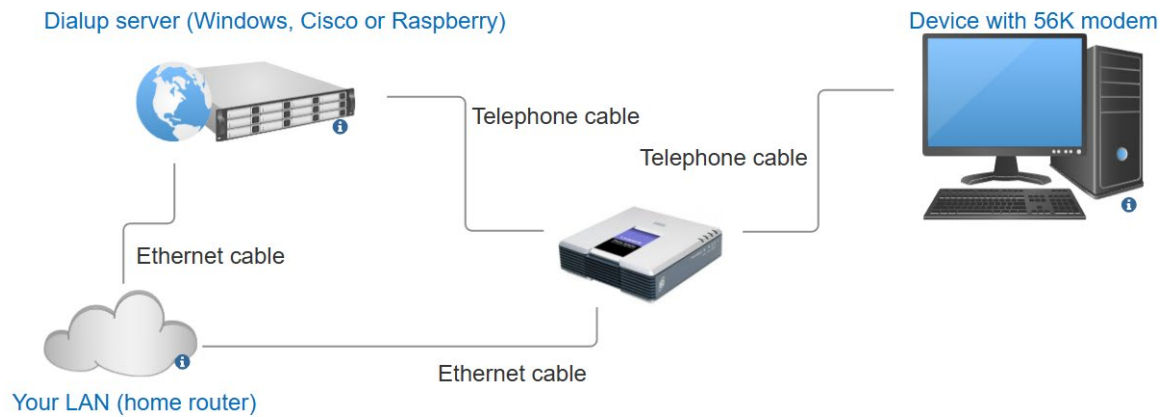
You can find them on ebay for a few €.

Some models:

- Cisco SPA2102
- Linksys SPA2102
- Linksys PAP2T
- Cisco SPA122
- Sipura SPA2100

I found one Linksys SPA2102 for €10

## Connection scheme



Now let's start:

## Server setup

The server takes care of providing authentication for the connection (you set the user and password here) and takes care of routing the traffic between the dialup connection and your LAN network.

### Windows Server as dialup server

If you have chosen to use a Windows server, you must configure the RRAS (routing and remote access) role. It's easy! Connect your server to your LAN via cable or WiFi and Follow this guide step by step

[https://web.archive.org/web/20240304210356/https://gekk.info/articles/ras\\_2k3.html](https://web.archive.org/web/20240304210356/https://gekk.info/articles/ras_2k3.html)

Notes:

- The steps are very similar for newer Windows servers too
- Follow the "preamble", "procedures" sections in order and before finishing read "troubleshooting". The "authentication" section is useful to know, I left MS-CHAP and MS-CHAP V2 as I only connected with Windows clients)
- If you are on Windows 2008 or higher, the "Remote Access Policies" section has been changed to "Remote access logging & policies", right-click on the folder and click on "launch nps", the options are then very similar to 2000/2003
- In the properties of the RRAS server (right click on the name of your server, properties, IPv4 tab, at the bottom "adapter" make sure that the network card connected to your LAN is selected, by doing so your home router will assign the IP addresses of your LAN to the devices you connect in dialup.

## Cisco router as dialup server

Source of this configuration:

<https://web.archive.org/web/20240418214026/https://serialport.org/blog/cisco-router-modem-isp-in-a-box/> - Thanks also to Mark of serialport.org for the suggestions sent by email.

Notes:

- I use a Cisco 1841 IOS 12.4 with 2 built-in Ethernet ports + a wic-1am-v2 card (but wic-1am also works)
- The router has 2 Ethernet ports, the 0 is configured as WAN and has to be connected to your home router. The 1 is configured as an additional LAN port and can remain disconnected
- My home LAN is class 192.168.0.X
- 192.168.0.1 is my router
- 192.168.1.X is the ip class assigned to devices connected to LAN1 port (which can remain disconnected - useless for this tutorial)
- Devices that connect via dialup get an IP 172.16.1.X, which with this configuration can still access resources on your LAN

```
1. show run
2. Building configuration...
3.
4. Current configuration : 2918 bytes
5. !
6. ! No configuration change since last restart
7. !
8. version 12.4
9. service timestamps debug datetime msec
10. service timestamps log datetime msec
11. no service password-encryption
12. !
13. hostname cisco1841
14. !
15. boot-start-marker
16. boot-end-marker
17. !
18. !
19. aaa new-model
20. !
21. !
22. aaa authentication login default local
23. aaa authentication ppp default if-needed local
24. aaa authorization exec default local
25. aaa authorization network default local
26. !
27. aaa session-id common
28. ip cef
29. !
30. !
31. no ip dhcp use vrf connected
32. ip dhcp excluded-address 192.168.1.2 192.168.1.25
33. !
34. ip dhcp pool DHCP-LAN-Pool-1
35.     network 192.168.1.0 255.255.255.0
36.     default-router 192.168.1.1
37.     dns-server 192.168.0.1 1.1.1.1 8.8.8.8
38. !
39. ip dhcp pool dialup
```

```
40. network 172.16.1.0 255.255.255.0
41. dns-server 192.168.0.1 1.1.1.1 8.8.8.8
42. default-router 172.16.1.1
43. !
44. !
45. ip name-server 1.1.1.1
46. ip name-server 8.8.8.8
47. ip auth-proxy max-nodata-conns 3
48. ip admission max-nodata-conns 3
49. !
50. !
51. !
52. username [here username for router and dialup connection] privilege 15 password 0 [here
password for router and dialup connection]
53. !
54. !
55. !
56. !
57. !
58. !
59. interface Loopback0
60. ip address 172.16.1.1 255.255.255.0
61. !
62. interface FastEthernet0/0
63. description WANPORT
64. ip address dhcp
65. ip nat outside
66. ip virtual-reassembly
67. duplex auto
68. speed auto
69. !
70. interface FastEthernet0/1
71. description LANPORT
72. ip address 192.168.1.1 255.255.255.0
73. ip nat inside
74. ip virtual-reassembly
75. duplex auto
76. speed auto
77. !
78. interface Async0/0/0
79. ip unnumbered Loopback0
80. ip nat inside
81. ip virtual-reassembly
82. encapsulation ppp
83. ip tcp header-compression
84. dialer in-band
85. dialer-group 1
86. async mode dedicated
87. peer default ip address dhcp-pool dialup
88. ppp authentication pap chap
89. routing dynamic
90. !
91. ip forward-protocol nd
92. ip route 0.0.0.0 0.0.0.0 192.168.0.1
93. !
94. !
95. no ip http server
96. no ip http secure-server
97. ip nat inside source list 1 interface FastEthernet0/0 overload
98. !
99. access-list 1 permit 192.168.1.0 0.0.0.255
100. access-list 1 permit 172.16.1.0 0.0.0.255
101. dialer-list 1 protocol ip permit
102. !
103. !
104. !
105. control-plane
106. !
107. !
108. !
```

```
109. line con 0
110. line aux 0
111. line 0/0/0
112. modem Dialin
113. modem autoconfigure type default
114. transport input all
115. autoselect ppp
116. stopbits 1
117. speed 115200
118. flowcontrol hardware
119. line vty 0 4
120. !
121. scheduler allocate 20000 1000
122. ntp clock-period 17179870
123. ntp update-calendar
124. ntp server 193.204.114.232
125. end
126.
```

## VOIP device setup

You need to access the WEB interface of the device and then follow this guide, section “Using a single ATA”

<https://web.archive.org/web/20240304210734/https://gekk.info/articles/ata-config.html>

Notes:

- As the guide says, the device must be left connected to any LAN, otherwise for some reason the telephone part does not work.
- The part we are interested in is: “Using a single ATA”
- When you configure the “dialplan” you will see a number inside the string “9095551010”, replace it with the number you want to call

## Start!

Now take an old pc, old laptop or PDA with a modem card and connect them to the free phone port of the VOIP device. Configure the connection with the number set up on the VOIP, put in the user and password you chose when you set up the server, and connect!

I connected with an old Thinkpad with Windows 2000 and via dialup I was able to surf internet and even open a shared folder on the NAS at home!

Please note that the connection will never reach 56K, but will always be 33K